

## CLAIM LISTING

Please amend the Claims as follows:

This listing of claims will replace all prior versions, and listing, of claims in the application:

*Applicant has made a good faith effort to list each and every prior claim, including any amendments or changes thereto (or status thereof) in this "Listing" section, however, should there be any discrepancy between the previous version of a claim (or status thereof) and the listing not explicitly amended, canceled or otherwise changed by this amendment, only the previous version (and status thereof) should be referred to as the intent of the Applicant.*

### Listing of the Claims:

1. (Currently Amended) An optical cross-connect apparatus, comprising:

a plurality of optical inputs;

a plurality of optical outputs;

an optical cross-connect ~~provided~~ defining a plurality of optical cross-connect paths between said plurality of optical inputs and said plurality of optical outputs; ~~and~~

at least one optical filter provided outside of said cross-connect, said at least one optical filter filtering at least one optical channel of an optical signal flowing into at least one of said plurality of optical inputs or filtering at least one optical channel of an optical signal flowing out of at least one of said plurality of optical outputs or both; and

wherein at least one of said plurality of optical cross-connect paths does not have a filter within said cross-connect in optical communication therewith.

2. (Original) The optical cross-connect apparatus of claim 1, wherein said optical cross-connect includes:

optical splitters optically coupled to said optical inputs; and

optical combiners optically coupled to said optical outputs, wherein said optical splitters are optically coupled to said optical combiners in a broadcast and combine arrangement.

3. (Original) The optical cross-connect apparatus of claim 2, wherein each optical input is optically coupled to a respective one of said optical splitters and each optical output is optically coupled to a respective one of said optical combiners.

4. (Currently Amended) ~~The~~ An optical cross-connect apparatus ~~of~~ claim 1, comprising:

a plurality of optical inputs;

a plurality of optical outputs;

an optical cross-connect provided between said plurality of optical inputs and said plurality of optical outputs; and

at least one optical filter provided outside of said cross-connect, said at least one optical filter filtering at least one optical channel of an optical signal flowing into at least one of said plurality of optical inputs or filtering at least one optical channel of an optical signal flowing out of at least one of said plurality of optical outputs or both;

wherein there are no optical filters included within said optical cross-connect.

5. (Original) The optical cross-connect apparatus of claim 1, wherein the optical cross-connect is spectrally transparent.

6. (Original) The optical cross-connect apparatus of claim 1, wherein at least one of said plurality of optical filters is a multi-band-pass filter.

7. (Original) The optical cross-connect apparatus of claim 1, wherein at least one of said plurality of optical filters is a reconfigurable multi-band-pass filter.

8. (Original) The optical cross-connect apparatus of claim 1, wherein said optical cross-connect includes a plurality of optical couplers.

9. (Original) The optical cross-connect apparatus of claim 1, wherein at least one of said plurality of optical couplers is a passive optical coupler.

10. (Currently Amended) A method of optimizing a cross-connect apparatus by reducing the number of filters required for cross connecting a plurality of optical inputs and a plurality of optical outputs, the method comprising:

providing an optical cross-connect between the plurality of optical inputs and the plurality of optical outputs; and

optically filtering at least one optical channel of an optical signal flowing into at least one of said plurality of optical inputs or at least one optical channel of an optical signal flowing out of at least one of said plurality of optical outputs or ~~both~~. both, thereby obviating the requirement of optically filtering said at least one optical channel within said optical cross-connect; and

providing a signal from said at least one optical input to at least one optical output without filtering said signal within said optical cross-connect.

11. (Currently Amended) The method of claim 10, ~~wherein the optical cross connect is spectrally transparent.~~ further including the steps of providing a signal from each of said plurality of optical inputs to each of said plurality of optical outputs without filtering any of said signals within said optical cross-connect.

12. (Original) The method of claim 10, wherein said optically filtering step includes multi-band-pass filtering at least one optical channel of an optical signal flowing into at least one of said plurality of optical inputs or at least one optical channel of an optical signal flowing out of at least one of said plurality of optical outputs or both.

13. (Currently Amended) An optical cross-connect apparatus, comprising:

a plurality of optical inputs;

a plurality of optical outputs;

an optical cross-connect provided between said plurality of optical inputs and said plurality of optical outputs such that paths are formed between a subset of said plurality of optical inputs and a subset of said plurality of optical outputs, wherein a path is defined as a connection between a particular optical input and a particular output;~~and~~

at least one optical filter provided outside of said cross-connect such that for ~~at least~~ each one path that exists between a particular optical input and a particular optical output, the path's input is filtered or the path's output is filtered or ~~both~~ both; and

wherein at least one of said paths does not have a filter within said cross-connect in optical communication therewith.

14. (Previously Presented) The optical cross-connect apparatus of claim 13, wherein said optical cross-connect includes:

optical splitters optically coupled to said optical inputs; and

optical combiners optically coupled to said optical outputs, wherein said optical splitters are optically coupled to said optical combiners in a broadcast and combine arrangement.

15. (Previously Presented) The optical cross-connect apparatus of claim 14, wherein each optical input is optically coupled to a respective one of said optical splitters and each optical

output is optically coupled to a respective one of said optical combiners.

16. (Previously Presented) The optical cross-connect apparatus of claim 13, wherein there are no optical filters included within said optical cross-connect.

17. (Currently Amended) The optical cross-connect apparatus of claim 13, ~~wherein for each path, the path's input is filtered or the path's output is filtered or both~~ substantially all of the paths do not have a filter within said cross-connect in optical communication therewith.

18. (Currently Amended) The optical cross connect apparatus of claim 13, ~~wherein said at least one of said optical filters is a multi band pass filter~~ wherein each path is filtered and the total number of filters is equal to twice the number of paths.

19. (Currently Amended) The optical cross connect apparatus of claim 13, ~~wherein said at least one of said input and output optical filters is a reconfigurable multi band pass filter~~ wherein there are N paths, wherein each path is filtered and wherein the total number of filters is less than  $N*(N-1)$ .

20. (Currently Amended) A fiber ring network, comprising:

a first and second outer rings carrying optical signals in a first direction;

a first and second inner rings carrying optical signals in a second direction opposite the first direction;~~and~~

an optical cross-connect apparatus as claimed in claim 1 for providing for at least an outer-to-outer connection between the first and second outer rings and an inner-to-inner connection between said first and second inner ~~rings~~ rings; and

wherein there are no optical filters within said optical cross-connect apparatus, said network further comprising at least one adjacent ring node optically placed in a path of one or more of said first and second outer rings and first and second inner rings such that said adjacent ring node performs an optical filtering function.

21. (Cancelled.)

22. (Currently Amended) The fiber ring network of claim 20 ~~21~~, wherein said adjacent ring node includes a multi-band-pass filter.

23. (Previously Presented) A mesh network, comprising:

an optical cross-connect apparatus as claimed in claim 1;  
and

an optical add/drop module optically connected to one of said plurality of optical inputs and to one of said plurality of optical outputs.

24. (Previously Presented) The mesh network of claim 23, wherein the optical add/drop module includes a first and second multi-band-pass filters.

25. (Previously Presented) The mesh network of claim 24, said first and second multi-band-pass filters are optically connected to said one of said plurality of optical inputs and to said one of the plurality of said optical outputs, respectively.

26. (Cancelled.)

27. (New) The optical cross-connect apparatus of claim 13, wherein each path has a unique optical input filter and optical output filter filtering only that path.

28. (New) The optical cross-connect apparatus of claim 2, wherein there are no optical filters within the optical coupling between said optical splitters and said optical combiners.